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Prevalence of gastro-intestinal parasites of calves in Mirsarai Upazilla of Chittagong district of Bangladesh

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Abstract

To investigate the prevalence of gastrointestinal parasites of calves, 450 feacal samples were collected from Mirsarai Upazilla of Chittagong District of Bangladesh during the period from 2011 to 2012. Fecal samples of calves aged up to 6 months of three different genotypes were examined for gastrointestinal parasites. The results of faecal examination revealed that 54.22% calves were infected with some of the parasites. *Toxocara* spp (22.66%), *Eimeria* spp (17.33%), *Strongyloides* spp (6.44%), gastrointestinal strongyles (3.78%), *Moniezia* spp (01.78%), *Trichuris* spp (01.56%) and *Fasciola gigantica* (0.66%) were found. We found eggs of *Toxocara* spp eggs, *Strongyloides* spp eggs and oocysts of *Eimeria* spp during the age of first month, gastrointestinal strongyles eggs and *Moniezia* eggs at/during/within the age of 3 months and eggs of *Trichuris* spp and *Fasciola gigantic* during the age of five months of age. Prevalence of gastrointestinal parasites in Local, Shahiwal cross and Holstein Frisian cross were 46%, 52% and 62%, respectively. The age and genotype of the calves and the locality of investigations might have influenced the prevalence of the parasitic infections.

Key words: Claves, Gastro intestinal parasites, Prevalence

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Introduction

Livestock is an important component of the mixed farming system practiced in Bangladesh for centuries. Cattle rearing in Bangladesh being popular with days because these species are valuable for economic, managerial and biological reasons, special emphasis has to be employed regarding proper health and production of them. Among the multitude of problems hindering the cattle development in Bangladesh, disease problems specially related to parasitism constitute a serious threat. Despite the special emphasis on the rearing ruminants, the development of the industry in Bangladesh is seriously threatened. So, it is essential to know the type of parasites involved in the production of parasitic diseases in cattle industry for its treatment, prevention and control under field condition. ADB (1984) reported that the loss of productivity of animal in terms of mortality, loss of milk and meat, and loss of production rate due to animal parasite's to the extent of 50% in Bangladesh. For cattle production, one of essential phase is adequate calf raising. In that phase, parasitic infection present a permanent source for calf health (Lyons et al. 1995; Busato et al. 1998; Lima 1998; Lentze et al. 1999; Wacker et al. 1999; Mondal et al. 2000; Snoep and Potters 2004; Kulisic et al. 2006, Akter et al. 2011). In the present study we examined prevalence of gastro intestinal parasites in calves of Mirsarai Upazila of Chittagong District and studied epizootiology of those found in order to detect suitable control strategies.

Materials and Methods

We examined 450 calves of three different genotypes (Local, Shahiwal cross and Holstein Friesian cross) breeding in individual production, usually in poor hygienic condition. The selected study areas are shown in Figure 1. Ages of examined calves were 1-180 days. Calves were grouped as four genotypic groups and three age groups.

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Faeces of calves were collected directly per rectum and examined with routine coprological methods by both flotation with saturated NaCl and $ZnSO_4$ and Stoll's counting method as described by Soulsby (1982).

Out of 450 examined calves, positive results of coprological examination were in 54.22%. We found following parasite species: *Toxocara* spp (22.66%), *Eimeria* spp (17.33%), *Strongyloides* spp (6.44%), gastrointestinal strongyles (3.78%), *Moniezia* spp (01.78%), *Trichuris* spp (01.56%) and *Fasciola gigantic* (0.66%). The prevalence and infestation rate in the animals are given in Table 1, Table 2 and Table 3.

Figure 1. Selected study area of Chittagong region

Table 1. Types of parasites found in calves in Mirsarai Upazilla of Chittagong region

SL NO	Parasites	Types
1	*Toxocara* spp, *Strongyloides* spp, Gastrointestinal strongyles	Nematode
2	*Moniezia* spp, *Trichuris* spp	Cestode
3	*Fasciola gigantica*	Trematode
4	*Eimeria* spp	Protozoa

Prevalence of gastrointestinal parasites in Local, Shahiwal cross and Holstein Frisian cross was found 46%, 52% and 62% respectively (Table 2). Holstein Frisian crossbred gives the highest percentage that is 62% and Local bred gives the lowest percentage that is 46%. Crossbred seems to be more susceptible to infestations than that of Local genotype.

Table 2. Prevalence of parasites in calves at Mirsarai of Chittagong according to genotype

Sl. No.	Genotype	Parasites recorded	%
1	Local	69 (150)	46
2	Shahiwal cross	78 (150)	52
3	Holstein Frisian cross	93 (150)	62
Total		244 (450)	54.22

Prevalence of infection with *Eimeria* species was high during 4 to 6 month old calves (Table 3). Oocysts of *Eimeria* in calves were first found at the age of 25 days. *Strongylloides* spp showed varied prevalence rate in aged groups. *Strongyloides* spp were first found at the age of 18 days. On the other hand gastrointestinal strongylidosis was found first time on 22 days old calves. Although, *Moniezia* spp was found in elderly calves, had slow increased of infection and appeared first time in calves older than 2 months. Trichurosis similar to *Moniezia* spp were revealed first time at calves on 4 months of age. The number of calves with *Trichuris* infection was very few. *Fasciola gigantica* was found for the first time at calves aged 170-180 days.

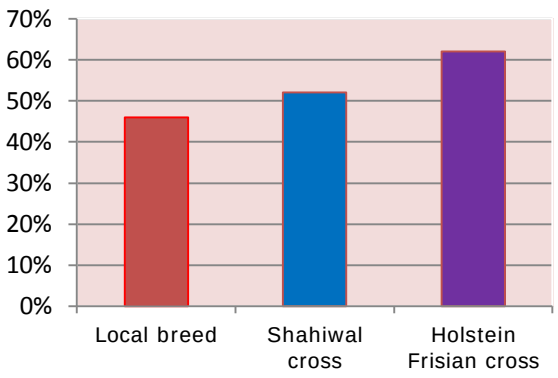

Figure 2. *Prevalence of gastro-intestinal parasitic infections of calves of different genotypes*

Table 3. Prevalence of parasites in calves in Mirsarai Upazilla of Chittagong according to age group

Sl. No.	Parasites	Age 0-1 (Month) (N=100)	Prevalence	Age 1-2 (Month) (N=100)	Prevalence	Age 2-4 (Month) (N=150)	Prevalence	Age 4-6 (Month) (N=100)	Prevalence	Total (N=450)	Prevalence
1	*Toxocara* spp	16	16%	28	28%	53	35.33%	5	5%	102	22.66%
2	*Eimeria* spp	3	3%	7	7%	39	26%	29	29%	78	17.33%
3	*Strongyloides* spp	1	1%	14	14%	6	4%	8	8%	29	6.44%
4	gastrointestinal strongyles	0	00	0	00	3	2%	14	14%	17	3.78%
5	*Monieza* spp	0	00	0	00	1	0.67%	7	7%	8	1.78%
6	*Trichuris* spp	0	00	0	00	0	00	7	7%	7	1.56%
7	*Fasciola gigantica*	0	00	0	00	0	00	3	3%	3	0.66%
	Total	20	--	49	--	102	--	73	--	244	54.22%

Discussion

Results of examination showed numerous parasites infection of in Mirsarai Upazilla of Chittagong District. The prevalence of parasitosis in different aged calves influenced breeding condition. Parasitism in different genotype vary widely among genotypes and the parasitic infestation rates were 46%, 52% and 62% in Local, Shahiwal cross and Holstein Frisian cross, respectively which was lower than the rate of infection of reported earlier by Akter et al. (2011). The variation between the present and earlier results might be due to the differences among the geographical locations and climatic conditions of the study areas, method of study, sample size, genotype of the animals. Bangladesh is a tropical country with hot-humid environment. Here most of the calves are reared in rural areas in scavenging or semi scavenging system. In this type of rearing, calves graze on the fields. Probably, this type of practice plays a vital role in the high rate of parasitic infestation. Highest infestation rate were recorded for Holstein Frisian cross followed by Shahiwal cross and Local. The exact etiology of this variation is not known. Both Holstein Frisian and Shahiwal are usually adapted in countries having relatively low temperature with minimal chances of parasitic exposure. The parasitic ecology and reproduction is closely related to an optimal environmental condition, which is not normally common in these countries. The crossbred animals in Bangladesh become readily infected by parasites and this might be due to different predisposing factors including managing of these animals in parasitic load environment (Sarker and Rahman 2000).

Toxocarosis is one of the most important parasites infections of calves, especially from its pathogenic role to calves. The results of the present study indicate a high prevalence of *Toxocara* spp in calves. Prevalence of *Toxocara* spp had increase with age of calves. But, in group of calves aged 4-6 months, we found rapid decrease of infection. Eggs of *Toxocara* spp in that group we found only 5% of cases where as in 2 to 4 month age group it was 35.33% (Table 3). This is similar to the finding of Kulisic *et al.*, 2006 and Roy et al. 2006. In first month of life we found infections with *Eimeri*a spp. Extensity of infection of *Eimeri*a spp in first two month of life were not high. High prevalence was noted at the age of 4-6 month (29%). Our results are similar with results of Marusic (1988) who recorded coccidiosis on 10-42% of examined calves. *Strongyloides* spp was also recorded in first month but in very low rate. High prevalence was noted at the age of 1-2 month of age (14%). However, in group of calves aged 2-4 months and 4-6 months, we found a decrease of infection.

The way of breeding had no significant role to influence prevalence of strongyloidosis on calves (Lentze 1987). However, small variation of infection in temporary breed over pastures might observed but overall infection remained similar. In the present observation intensity of strongyloidosis infection was found to be low on examined animals. Gastrointestinal strongyles were recorded first in the age group of 2-4 months but increased prevalence rate was found

in the age group of 4-6 months. Temporary breeding calves had better condition of development and less parasitic infection such as *Moniezia* spp., *Trichuris* spp and *Fasciola gigantica* than Pasteur in natural condition (Moreira et al. 1999). In the present study the rate of infection of those were few to draw such conclusion.

Conclusion

In this study, the overall prevalence gastro intestinal parasites of calves and the variation in relation to their sex and seasonal dynamics were investigated in Mirsarai Upazilla of Chittagong. revalence of gastrointestinal parasites was found high in different genotypes of calves. The age and genotype of the calves and the locality of investigations might have influenced the prevalence of the parasitic infections. Generally the warm and humid conditions, which prevail in much of South-East Asia, provide favorable condition for many gastro-intestinal parasites. Inadequate stables and improper anthelmintic treatment might be the other contributing reasons.

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